BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

State Land Office Building

Santa Fe, New Mexico

September 2, 1970

EXAMINER HEARING

IN THE MATTER OF: Application of Depco, Inc., for a waterflood project, Eddy County, New Mexico.	Case No. 4415

BEFORE: ELVIS A. UTZ, Examiner

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date SEPTEMBER 2, 1970 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
John F. Russell	Texas-Pacific	Roswell
Omer Roberts	Texas Pacific	Midland
John M. Strader	Depco	Denver
Melton C. Smith	Depco	Odessa, Texas
Booker Kelly	Pepsi-Cola Bottling	S F
[illegible]	Kellahin & Fox	Santa Fe.
J H Hoover	Gulf Oil Corp	Roswell
W J Kastler	✓	✓
[illegible] Hutchison	✓	✓
[illegible]	[illegible]	Santa Fe
Orlando Bravo	H.C. Thompson	Dallas Texas
Don Billings	Don Billings	Midland Tex
C.E. Koch	M G F	Midland, Texas
Ross D. Rogers	Major, Giebel & Forster	Midland Texas
R. J. Strange	Phillips Pet	Hobbs

MR. HATCH: Case 4415: Application of Depco, Inc., for a waterflood project, Eddy County, New Mexico. Applicant in the above styled cause, seeks authority to institute a waterflood project by injection into the Grayburg and San Andres formations through 6 wells location in Sections 27, 33 and 34, Township 18 South, Range 28 East, Artesia Pool, Eddy County, New Mexico.

MR. KELLY: William Booker Kelly. I have one witness and ask that he be sworn.

(Witness was sworn)

JOHN STRADER,

the witness, having been first duly sworn upon his oath, according to law testified as follows:

DIRECT EXAMINATION

BY MR. KELLY:

Q For the record would you state your full name and your position with Depco and your address.

A John Strader. I am the Chief Engineer for Depco, Inc., Denver, Colorado.

Q And have you previously qualified as an expert witness in the field of petroleum engineering before this Commission?

A Yes, in Case 37 and 47.

Q Would you refer to what has been marked Exhibit No. 1 and briefly state what Depco seeks by this application?

A Depco seeks to establish an 840 acre waterflood project in the Artesia Field, in a portion of Sections 22, 23, 27, 33 and 34 in Township 18 South, Range 28 East, in Eddy County, New Mexico. Depco also seeks to convert State 647 Lease, Well Nos. 92, 100, 207 and 217 to water injection wells.

MR. UTZ: Sir, do you have a list of those wells?

THE WITNESS: Yes, Sir.

MR. UTZ: In this exhibit?

THE WITNESS: Yes, Sir.

Q That is exhibits 3 A, B, C & D. Do they show the footage?

A Yes.

Q A, B, C, D, & E -- there are five of them altogether. That is in the sketch?

A Yes. That is exhibit 3. The injection interval will be covered later.

MR. UTZ: I want to check your testimony here.

THE WITNESS: In the original application we asked that well No. 90 also be approved for conversion to water injection, but we no longer ask for that.

Q You filed an amended application with the amended plat deleting that well, is that correct?

A That is correct.

MR. UTZ: Is it in here?

MR. HATCH: Yes, I think so.

MR. UTZ: You still got it listed.

THE WITNESS: Well No. 90?

MR. UTZ: Yes. Alright now, your State Lease 647, what number wells did you testify there you wanted to change? I will change them on the application.

THE WITNESS: We will convert Well No. 92, 100, 207 and 217.

MR. UTZ: And our State E 1288?

THE WITNESS: That well is not to be converted to injection.

MR. UTZ: How many wells are you making application for all together?

THE WITNESS: Four wells and to change the status of Well No. 82 from a salt water disposal classification to a waterflood injector.

Q Do you have the Order Number on that last well?

MR. UTZ: That is 3454, I guess.

THE WITNESS: that is correct.

MR. UTZ: O. K. You may proceed.

THE WITNESS: These wells are shown on Exhibit 1 which is a plat of the area. The wells to be converted are noted in red. The salt water disposal well is noted by a triangle colored blue.

Q Now, your waterflood project is outlined in broken

lines, is that correct?

A That is correct.

MR. KELLY: Does the Examiner want a more thorough description of the project area in the testimony?

MR. HATCH: No. The project area will be determined from this.

Q Alright. Would you identify what else is shown on Exhibit 1?

MR. HATCH: May I interrupt you a moment? It looks like the project area would not be outlined here.

MR. KELLY: Because of probably the acreage over in Section 20.

MR. HATCH: I believe it would be too far away in offsetting injection production wells, wouldn't it?

THE WITNESS: That is right. That is the Northwest Quarter of the Northeast Quarter of Section 33.

MR. UTZ: You understand how the project area is?

THE WITNESS: Yes.

Q Actually then -- I didn't see this application, but we would like to have approval for administrative expansion without showing response, is that correct?

A Yes.

Q Alright. What else is shown on Exhibit 1?

A Exhibit 1 shows all wells within a radius of two miles. Shown here are several waterfloods in this area. The

D & E Allen, which is the west offset lease, is involved, is a Loco Hills flood. Also a Loco Hills flood is American Petrofina Flood No. 2, which offsets our project to the west. A Collier Coop a mile and a half northwest is a waterflood in the primary. The Ryder Scott Depco Coop, a mile and a half northeast. There is an abandoned Depco waterflood a mile and a half south which is in the Grayburg. There are no San Andres waterfloods within this two mile radius.

Q Now, you were going to flood the San Andres and Grayburg by this application, is that right?

A That is correct. The San Andres wells are wells completed in the San Andres, are noted on the plat with a circle.

Q Now, how many producing wells do you have in the project area?

A Twenty two. There are twenty one producing wells and one salt water disposal at the present time.

Q What is the ownership status under your project?

A Depco is the operator of all leases involved in the project area. There are two leases, the State 647 Lease and the State E 1288 Lease. The State 647 Lease is divided into three accounts due to slight differences in the net interests.

Q Now, can you give the Examiner a brief summary of the geology under this project?

A The San Andres trend, which is the primary objective

for the waterflood project, is a long narrow trend extending six miles to the northeast and to the Grayburg Jackson Field. The dip is to the east southeast, although it is erratic and varies in depth. The oil water contact is the principle factor limiting the field to the south and the east. Loss in permeability limits the pool to the northwest. This is solution gas drive pool.

Q Alright now, referring to what has been marked Exhibit No. 2 with four parts, A, B, C and D -- the logs -- would you point out the significant features in those exhibits. These are logs of the four injection wells and not the presently approved salt water injection well, is that right?

A That is correct. Exhibit 2 A through 2 D are radioactive logs over the Grayburg and San Andres formations. The top of the San Andres is marked on each log.

Q And Exhibit 3 A, B, C, D and E is diagramatic sketches of all the proposed injection wells, is that correct?

A That is correct. These exhibits show hole size casing programs, cement tops, proposed tubing and packer depth and completion intervals. Exhibit 3 A is a diagramatic sketch of State 647 account 711 Well No. 82. This well is in the Southeast Quarter of the Northwest Quarter of Section 27. The injection interval --

Q That is the one in blue?

A That is right. That is salt water disposal well and

the injection interval is 2471 to 2926.

Q Now, the diagram you show on Exhibit 3 A is the present installation in that well, is that right?

A That is correct.

Q Alright.

A Exhibit 3 B, State 647 account 711 Well No. 92, in the Northeast Quarter of the Northwest Quarter of Section 27; the injection interval is 2720 to 2820.

Q Alright.

A State 647 account 711 Well No. 100 is the Northeast Quarter of the Northeast Quarter of Section 27; the injection interval is 2450 to 2920.

Exhibit 3 D, State 647 Account 721 Well No. 207, in the Northeast Quarter of the Southeast Quarter, Section 33; the intended injection interval is 2696 to 2786.

Q Now, all of these wells have plastic coated tubing?

A They will.

Q And I notice on -- I think it is 3 B and 3 E -- that you have some perforations above your packer. How are you going to handle avoiding any migration in those wells?

A Migration upward will be monitored by putting a pressure gauge on the casing annulus and if it is determined that we do have pressure on the casing annulus, at that time the perforations will be squeezed with cement.

Q Now, in your other wells you will fill your annulus

with some kind of a pressure gauge?

A We will.

Q What is the source of your water injection?

A We intend to purchase water from Double Eagle Water Corporation.

Q And that could be under the contract either fresh or salt water?

A We have a contract in effect now that calls for either brackish or fresh water.

Q I take it the produced water that is going in the existing salt water well is not sufficient for the flood?

A Yes. That is correct.

Q Do you anticipate any corrosion problems?

A No. Our system is protected mechanically.

Q Is there any fresh water near the surface of this area?

A Very little.

Q It is not an appreciable amount?

A That is correct.

Q In your opinion, will the installations you have shown on Exhibits 3 A through E prevent migration of injection fluids to any other zone?

A They will.

Q Now, what is your injection rate now on your Well No. 82?

A Our injection rate at the present time is 130 barrels a day which represents the produced water from the area shown on the Exhibit 1.

Q And are you having any problem to get the well to take that amount?

A No. It is on the vacuum.

Q What do you anticipate your injection will be?

A We anticipate 800 barrels a day.

Q How about pressure?

A At 1400 pounds.

Q And there will be no problem, so far as you know?

A That is correct.

Q Now, going on to Exhibit No. 4, what is the present status of the injection wells, the four injection wells?

A The four injection wells shown in red on Exhibit 1, the average producing rate is 3 barrels of oil per day.

Q And I notice your top producer there, No. 205, is only 12. Would you say that the wells in the project area have reached clearly their advanced stage of depletion?

A They have -- some 90 to 95 percent depleted of primary.

Q Do you have an estimate of about a million barrels of recoverable primary from this pool?

A That is correct.

Q And you have produced about 931,000. Now, do you

have an estimate of what the recovery will be if you get a successful secondary project?

A We anticipate three quarters of a million barrels of recoverable due to waterflood.

Q Is there anything else you want to point out on Exhibit No. 4?

A Shown on Exhibit No. 4 are the completion intervals, the date of completion and stimulation.

Q Now, in your opinion, would the granting of this application allow you to recover hydrocarbons that would otherwise be left in place and thereby protect the correlative rights of all parties in the area?

A That is right.

Q Were Exhibits 1 through 4 prepared by you or under your supervision?

A They were.

MR. KELLY: At this time, I move the introduction of Depco's Exhibits 1 through 4.

MR. UTZ: Without objection, Exhibits 1 through 4 will be entered into the record of this case.

MR. KELLY: We have no further direct testimony.

CROSS EXAMINATION

BY MR. UTZ:

Q Have you received any response from the water you have injected from the No. 82?

A No. The cumulative injection is some 86,000 barrels and we have not filled up this reservoir in the vicinity of this well.

Q What is the surface cement on the No. 92?

A That has been omitted and I will have to -- this well has no surface casing, so far as I know.

Q Now, the top of the cement is at 1500, is that correct?

A The calculated top is at 1500.

Q It is your testimony you have no cement above 1500?

A So far as I know, that is correct.

Q Could you confirm that?

A By letter?

Q Yes.

A I will.

Q If this is true, I am real surprised it has been going on this long.

A There are several wells in this vicinity where permission was granted from the Commission to pull surface casing. These are quite old wells completed in -- this particular well was completed in July of 1948.

Q On the No. 100, the cement you figure is 200 feet from the surface, is that correct?

A On Well No. 100, 1000 feet from the surface on the surface casing, yes, Sir.

Q The same on 207?

A Yes, Sir.

Q Now, you mentioned on your No. 92 that you were going to put pressure up the annulus and if it didn't hold pressure you were going to squeeze the perfs?

A No, Sir. We will monitor the pressure in the annulus with a pressure gauge and at such time that we do get pressure on the casing annulus, we will squeeze the perforations if it is determined that it is not a packer or tubing leak.

Q In other words, you are going at it the other way. You are going to say that you load the annulus. Now, what if it doesn't hold water -- do you intend to load the annulus?

A We will load the annulus. I am sure that it won't hold water to the surface. We will go ahead and convert the well to injection and at such time as we have pressure build up on the annulus, we will squeeze the perforations.

Q And the same is true for the 217?

A That is correct.

Q You are making application here for injection in both the Grayburg and San Andres?

A Yes, Sir.

Q All these wells open in both zones?

A No, Sir. They are all open in the San Andres. This is our primary objective, however, we'd like to have approval to flood the Grayburg as a secondary injector.

Q None of them open in the Grayburg?

A Yes, Sir. Some of them are open in the Grayburg. Well No. 92, these perforations that are presently isolated are in the Grayburg. The same with 217.

Q Which perforation is that -- the ones above the packer?

A Yes.

Q That is Grayburg?

A Yes, Sir.

Q O. K. What other wells?

A 217.

Q Now, are both sets in the upper purse in the Grayburg?

A This is on 217?

Q Yes, Sir.

A No. The only set -- the only perforations that are in the Grayburg are those that are above the packer. This particular well, the top of the San Andres is approximately 2365.

Q Well, I got a note here from our district geologist in Artesia. He says the 82 is open into the Grayburg and San Andres as well as the No. 100. I don't know whether you geologists have got the tops the same or not.

A That is correct. 82, in this salt water disposal application we received approval to inject into the Grayburg and the San Andres and the top of the San Andres is 2490. In

Well No. 100, the top of the San Andres is at 2550 which leaves 50 feet of Grayburg in the open hole section.

Q So in effect you will be injecting in both zones right off the bat, won't you?

A In the wells 82 and 100, the wellbore -- the Grayburg will be subject to injection. In Well No. 82 there is no water going into the Grayburg at the present time.

Q How much Grayburg have you got in No. 82, the whole thing?

A I don't know the top of the Grayburg or the San Andres.

Q You don't have that?

A No, Sir.

Q Do you have anything in the record that would show the area of the two leases, your State 647 and the State E 1288?

A On Exhibit No. 1, except all of the area outlined with a dashed line in State 647 with the exception of the Southwest Quarter of the Northeast Quarter of Section 27, this is a forty acre tract. That is not in the State 647 lease, however, the working interest is common.

Q That is in the E 1288 -- it is marked E 1288?

A Yes. The location is -- the lease name is State E 1288.

Q That is all of the 1288 lease that is in your area?

A No. There is one non-contiguous tract on this lease in Unit GN, Section 22.

Q That is outside of the unit there?

A That is correct.

Q So you'd have forty acres which would be the Southwest of the Northeast Section 27. All the rest of your area is -- that would be in the project area -- is State 647 lease?

A Yes, Sir.

MR. HATCH: I think there is going to be a little problem here because you are probably going to have to waterflood in that project because there are two separate leases. Now we have got a lease without an injection well.

MR. UTZ: Have you contacted the State Land Office yet?

THE WITNESS: No, Sir.

MR. UTZ: I am afraid maybe you should.

MR. KELLY: Why don't we -- can we ask to amend the application to create two floods and then we will contact the State Land Office and be back in touch with you?

MR. UTZ: We'd have to have an injection well.

MR. KELLY: In the second lease?

MR. UTZ: Yes.

THE WITNESS: Can we remove this lease from the project area?

MR. KELLY: That would be the easiest way.

MR. UTZ: I presume you could. Couldn't he?

MR. HATCH: Yes.

THE WITNESS: I would like to do that.

MR. HATCH: It could be left in there and create another one.

THE WITNESS: I'd like to delete it from the project area.

MR. KELLY: We will just move to go ahead and delete that from the tract.

MR. UTZ: Alright. Any other questions of the witness:

Statements in the case?

The witness may be excused. The case will be taken under advisement.

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, Peter A. Lumia, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Peter A. Lumia

Peter A. Lumia, C.S.R.

I do hereby certify that the [illegible]
a complete record of the proceedings in
the Examiner hearing of Case No. 4415
heard by me on 9-20-70.

[signature], Examiner
New Mexico Oil Conservation Commission

I N D E X